

B. Claims

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1-2. (Cancelled)

3. (Currently Amended) A production method for a membrane electrode assembly for a solid polymer fuel cell proton-exchange membrane fuel cell, the assembly comprising a polymer electrolyte membrane and an electrode metal catalyst layer, at least a part of the polymer electrolyte membrane infiltrating into the electrode metal catalyst layer, the production method comprising the steps of:

coating the electrode metal catalyst layer with a composition containing at least a compound having proton conductivity and activity to an active energy ray to form a precursor layer of the polymer electrolyte membrane composed of the composition, at least a part of the composition infiltrating into the electrode metal catalyst layer;

bringing an electrode metal catalyst fixed to another electrode into contact with a coated surface; and

polymerizing the composition by irradiating the precursor layer with the active energy ray to simultaneously conduct formation of the polymer electrolyte membrane and bonding of the polymer electrolyte membrane with the electrode metal catalyst layer, at least a part of the polymer electrolyte membrane infiltrating into the electrode metal catalyst layer.

4. (Previously Presented) A production method for a membrane electrode assembly according to claim 3, wherein the electrode metal catalyst layer has a thickness of 0.01 to 200 μm , and an infiltration amount of the composition into the electrode metal catalyst layer is equal to or smaller than the thickness of the electrode metal catalyst layer.

5. (Previously Presented) A production method for a membrane electrode assembly according to claim 3, wherein the composition is coated after a reinforcement member composed of an electrical insulator is provided on the electrode metal catalyst layer.

6. (Cancelled)

7. (Previously Presented) A production method for a membrane electrode assembly according to claim 3, wherein a thickness of the precursor layer is from 5 to 500 μm .

8. (New) A production method for a membrane electrode assembly according to claim 3, wherein the compound having proton conductivity and activity to an active energy ray is bis(methacryloyloxy) ethyl diphosphate.

9. (New) A production method for a membrane electrode assembly, the assembly comprising a polymer electrolyte membrane and an electrode metal catalyst layer, at least a part of the polymer electrolyte membrane infiltrating into the electrode metal catalyst layer, the production method comprising the steps of:

coating both sides of a sheet reinforcement member with at least a compound having proton conductivity and activity to an active energy ray which is a precursor of the polymer electrolyte;

bringing an electrode metal catalyst surface fixed to an electrode into contact with each of the both sides of the sheet reinforcement member; and

polymerizing the precursor of the polymer electrolyte by electron beams to form the membrane electrode assembly.